Special Articles

The Economic Impact of Psychotherapy: A Review

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Objective: The authors reviewed data involving the impact of providing psychotherapy for psychiatric disorders on costs of care. Method: In a search of the MEDLINE database limited to peer-reviewed papers published from 1984 through 1994, 686 articles were identified. Forty-one articles, covering 35 studies, were found in which the intervention tested was psychotherapeutic and the study included measures of outcome that had some implications for cost. The exclusion criteria for reviewing these studies included absence of a comparison group, a focus on medical disorders instead of psychiatric illnesses, and outcomes that did not include cost data or measures from which costs could be inferred. On this basis, 18 of the 35 studies were selected for analysis. The studies were categorized according to whether or not subjects were randomly assigned to study groups. Two reviewers independently read each study to identify the following characteristics: inclusion criteria, exclusion criteria, types of interventions, main outcome variables, sample size, and statistical tests for significant differences between treatments. Outcomes had to include actual cost accounting or data on medical care utilization or work functioning. Results: The findings of eight (80%) of the 10 clinical trials with random assignment and all eight (100%) of the studies without random assignment suggested that psychotherapy reduces total costs. Conclusions: Psychotherapy appears to have a beneficial impact on a variety of costs when used in the treatment of the most severe psychiatric disorders, including schizophrenia, bipolar affective disorder, and borderline personality disorder. Much of that impact accrues from reductions in inpatient treatment and decreases in work impairment.

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In 1984 Mumford et al. (1) published a review of 58 studies designed to investigate the effect of psychotherapy on subsequent medical care utilization. Of these studies, 26 were naturalistic time-series studies that compared medical care utilization before and after psychotherapy. Thirty-two studies were experimental in design, in that patients were assigned to treatment conditions randomly (or through a thoughtful matching system). The authors found that 85% of the studies reported a decrease in utilization of medical care following psychotherapy. Of the 22 methodologically rigorous studies that used random assignment, psychotherapeutic interventions reduced medical inpatient stays by approximately 1.5 days below the control groups' average of 8.5 days.

The Mumford et al. review is now substantially outdated. It was published at a time when reimbursement for medical services was considerably different from what it is today and when fewer psychopharmacology options were available. In addition, psychotherapy was defined so broadly in the review that interventions such as educating patients before surgery were considered under the rubric of psychotherapy. Perhaps the most dated aspect of the study is that it concentrated rather narrowly on cost offset (i.e., reductions of medical care costs due to the addition of psychotherapy) rather than on the broader issue of cost-effectiveness. In the last decade or so, the emphasis in the mental health field has shifted away from cost offset to a more complex understanding of the economic impact of psychosocial inter-

ventions. One factor in this shift has been the recognition that the concept of cost offset tends to ignore the effects of psychiatric disorder on the quality and quantity of life. Inherent in the concept of cost offset is the notion that treating mental illnesses is only beneficial because it reduces overall costs of medical care (2). Also, some carefully designed studies, such as the Rand Health Insurance Experiment (3), have failed to find substantial support for the idea that provision of psychotherapy reduces utilization of medical services.

Moreover, an emphasis that is exclusively focused on savings in treatment costs may be misplaced. As Wells and Sturm (4) have stressed, "*Cost-effective* does not necessarily mean *cheap* but instead means *high value*; quality improvement may be cost-effective even if it increases direct treatment costs" (p. 85). Too often discussions of cost-effectiveness overemphasize costs and ignore effectiveness. Wells and Sturm pointed out that in the case of depression, for example, one of the "high value" aspects of good treatment is reduced absenteeism from work and higher productivity on the job. Government agencies may also benefit as a result of fewer transfers of funds into unemployment and disability payments. These investigators concluded that "cost offsets can exist from a larger societal perspective because the main element of the social costs of depression is indirect losses through illness, not direct treatment costs" (4, p. 87).

This broadened view of cost issues is applicable to the treatment of other psychiatric disorders besides depression. An economic assessment of treatment must always include two different types of costs: 1) direct costs related to actual dollar expenditures for delivery of the treatment and 2) indirect costs associated with lost productivity related to the illness, disability, and problems on the job (2).

In this communication we have undertaken an updated review of the literature since the publication of the Mumford et al. paper in 1984 (1). Our specific aim is to review data that illuminate the effect of psychotherapy on a variety of costs, including the cost of the psychotherapy itself, the cost of psychiatric hospitalization, the cost of mortality, the cost of disability and impaired work performance, and other medical and laboratory costs. This review does not examine the larger and more complicated issue of whether standard benefit packages and insurance policies should include coverage for psychotherapy.

METHOD

For purposes of this review, we adopted a broad definition of psychotherapy derived from the one proposed by McGrath and Lowson (5). We consider psychotherapy to be the treatment of a patient or patients by psychological processes in the context of a therapeutic relationship in which the involvement of a trained therapist is a clearly recognized factor. Family, group, and individual treatments are included, as are specialist behavioral treatments, and no specific theoretical orientation is implied.

We conducted a MEDLINE search of the entire English-language literature from 1984 through 1994 using the following terms: psychotherapy and cost-effectiveness; psychotherapy and cost offset; psychotherapy and utilization of medical care; psychotherapy and inpatient admissions; efficacy of individual, group, and family therapy; family therapy and prevention of relapse; group therapy and prevention of relapse; and psychotherapy and psychology. We limited the search to peer-reviewed papers. This search produced 686 references. Because some of the newer psychotherapy journals are not yet included in *Index Medicus,* we also examined these sources, but we found no additional studies that met our criteria.

In selecting abstracts from the search, we chose only studies that met all of the following inclusion criteria. 1) The study had to test an intervention that was psychotherapeutic, whether it involved individual, group, or family therapy. 2) The study had to have measures of outcome that had some implications for cost, such as utilization of services, relapse into illness with a likely increase in treatment costs, number and duration of hospitalizations, number of medical visits, job performance, employment status, general health care costs, laboratory tests and X-rays, and suicide. 3) Review papers and meta-analyses were unacceptable.

Using the inclusion criteria, we selected 41 papers from the 686 abstracts. We reduced the papers to a core group of 35 studies by eliminating additional reports that used the same data from these studies. Two reviewers independently read each of the papers stemming from these 35 studies to identify the following characteristics: inclusion criteria, exclusion criteria, types of interventions, main outcome variables, sample size, and statistical tests of significant differences between treatments. We then further narrowed down these 35 studies using the following exclusion criteria. 1) The study had no comparison group. 2) The focus was on medical disorders rather than psychiatric illnesses. (However, we considered psychosomatic illnesses and substance abuse to be "psychiatric," and we included studies of medical and surgical patients if a specific psychiatric disorder such as depression was the main focus of the study and of the treatment.) 3) The outcome did not include cost data or measures of the kind we previously noted, from which costs could be inferred. We did allow studies that calculated overall costs by using imputed price indexes multiplied by utilization measures. In this regard, we excluded studies that reported relapse rates but did not report data such as rehospitalization or job performance, from which costs could be inferred.

A prime example of this type of excluded study is the Frank et al. investigation (6, 7) of maintenance treatment for recurrent depression. In a 3-year trial involving 128 randomly assigned patients, the investigators found that monthly interpersonal therapy lengthened the time between relapses. However, relapse was assessed with instruments such as the Hamilton Rating Scale for depression (8) and the Raskin Severity of Depression scale (9). No information on such items as hospitalization or work disability was reported.

Similarly, the National Institute of Mental Health Treatment of Depression Collaborative Research Program (10) demonstrated that both interpersonal therapy and cognitive-behavior therapy are efficacious in the treatment of moderately depressed patients. The instruments used to assess outcome, however, did not give sufficient information on use of medical services, inpatient stays, or disability payments to make cost-saving estimates feasible. Similar considerations applied to the careful studies of Leff et al. (11–13) on family therapy for patients with schizophrenia and the elegant investigations of Glick et al. (14–16), Spencer et al. (17), and Clarkin et al. (18) on inpatient family therapy with patients suffering from major psychiatric disorders.

We chose studies only if the outcomes were based on actual cost accounting or on data involving health care utilization and/or work functioning. We considered using statistical pooling methods of meta-analysis, because it is a useful tool for summarizing data from multiple studies (19, 20). However, such methods have rarely been used in cost studies because, as we noticed in our review, studies vary widely in the type and number of cost categories that are included in the data collection. We present, instead, the data in their raw, tabular form to permit the reader to assess each of the outcomes.

RESULTS

Of the 35 studies reviewed, 18 distinct studies (51.4%) met our criteria. The 18 studies were divided

TABLE 1. Clinical Trials With Random Assignment to Treatment From Which Effects of Psychotherapy on Costs of Care Were Determined or Can Be Inferred

Study	N	Interventions	Outcome Measures	Results of Each Intervention			
				1	2	3	4
Affective disorders							
Scott and Freeman, 1992 (21)	121	1. Amitriptyline/psychiatrist 2. Cognitive-behavior therapy 3. Social worker counseling 4. General practitioner care	Cost of therapist time (£, 1986)[a] Appointments with specialist (number)[a] Time spent with specialist (minutes)[a]	113 9 237	115 20 463	121 13 727	26 4 50
Schizophrenia							
Falloon et al., 1985 (22); Liberman et al., 1987 (23) (two reports from one study)	36	1. Behavioral family management consultation 2. Individual supportive therapy	Patients rehospitalized (number at 2 years)[b] Time spent in hospital (days)[b] Cost of nursing care visits ($/year, 1985)[c] Cost of hospital care ($/year, 1985)[c] Cost of family visits ($/year, 1985)[a] Total cost of care ($/year, 1985)[a] Employment (months at 2 years)[a]	4 1.8 495 4,245 32,305 160,000 7.5	10 11.3 4,290 45,280 325 196,000 5.4		
Spiegel and Wissler, 1987 (24)	36	1. Family consultation 2. No consultation	Time spent in hospital (days at 3 months)[c] Patients hospitalized (%/year)[a] Outpatient visits (number at 3 months)[d]	1 57 6	12 50 3		
Tarrier et al., 1989 (25), 1991 (26)	73	1. Behavioral family inter-vention: high expressed emotion group 2. Control: high expressed emotion group 3. Control: low expressed emotion group	Cost of hospital admissions (£, 1987)[c] Cost of psychiatric outpatient care (£, 1987)[a] Total cost of medical care (£, 1987)[a] Hospital admissions (number per patient)[c]	104 167 1,171 0.71	830 122 1,603 0.93	321 131 822 0.50	
Hogarty et al., 1991 (27)	103	1. Family intervention and medication 2. Social skills training and medication 3. Family treatment, social skills training, and medication 4. Control: medication	Relapse rate (% at 2 years)[c,e]	32	57	35	66
Vaughan et al., 1992 (28)	36	1. Counseling of relative 2. Medication, regularly scheduled follow-up	Hospital readmission rate (%/year)[b] Time spent in hospital (days per admission)[a] Time before readmission (weeks)[a]	50 10 13	50 16 13		
Zhang et al., 1994 (29)	78	1. Family intervention plus medication 2. Family intervention without medication 3. Medication without family intervention 4. No family intervention, no medication	Hospital readmission rate (% at 18 months)[c] Hospital-free period (days)[c]	10 332	38 158	36 188	77 95
Borderline personality disorder							
Linehan et al., 1991 (30), 1993 (31)	44	1. Dialectical behavioral therapy 2. Treatment as usual	Hospital admission rate (%/year)[b] Time spent in inpatient psychiatric care (days per hospitalized subject)[c] Time spent in inpatient psychiatric care (days per subject, for all subjects)[a]	35 15 8	55 50 39		
Anxiety disorders							
Ginsberg et al., 1984 (32)	48	1. Nurse-directed psychotherapy 2. Generalist-directed care	Change in total cost per patient (£, 1981)[c]	–24	+128		
Substance abuse							
McLellan et al., 1993 (33)	102	1. Minimum "counseling" services 2. Standard psychotherapy 3. Enhanced psychotherapy	Employment income ($/month, 1993)[c] Welfare income ($/month, 1993)[c] Work history (days worked per month)[c] Work history (% working)[b] Hospitalization rate (% at 6 months)[c]	461 124 10 0 40	552 90 10 69 21	580 63 13 77 0	

[a]p value not reported.
[b]Nonsignificant difference between groups.
[c]p<0.05.
[d]The "trend persisted but remained nonsignificant at 1 year of follow-up."
[e]Two-thirds of relapsed patients required hospital admission. For nonrelapsed patients (N=52), the proportion employed at 2 years=50% for groups 1 and 3 (combined data of patients with family treatment; N=30) and 27% for groups 2 and 4 (data of remaining patients with no family treatment; N=22) (p<0.05).

TABLE 2. Clinical Trials With Nonrandom Assignment to Treatment From Which Effects of Psychotherapy on Costs of Care Were Determined or Can Be Inferred

Study	N	Interventions	Outcome Measures	Results of Each Intervention			
				1	2	3	4
Affective disorders							
Retzer et al., 1991 (34)	30	Family therapy 1. After 2. Before	Hospital admissions (number per year)[a]	0.3	1.5		
Verbosky et al., 1993 (35)	18	1. Psychiatric consultation with psychotherapy and anti-depressants for depressed medical service patients 2. Psychiatric consultation without psychotherapy or antidepressants	Time spent in index hospital admission (days)[a]	13.8	45.6		
Schizophrenia							
Haakenaasen and Ugel-stad, 1986 (36)	30	1. Vocational rehabilitation 2. Intensive outpatient psycho-analytic psychotherapy 3. Inpatient nonintensive group-milieu therapy 4. Inpatient "emergent" milieu therapy	Time spent in hospital (months at 8 years)[b] Work history (% working at 8 years)[b]	2 50	3 11	5 12	10 3
Lehtinen, 1993 (37)	92	New treatment that included group and crisis-oriented family therapy 1. After (1983–1984) 2. Before (1976–1977)	Patients hospitalized (% in 5th year)[b] Hospital days per year at 5 years[b] Patients receiving disability payments (%)[a]	14 27 18	45 56 51		
Rund et al., 1994 (38)	24	1. Psychoeducation 2. Standard reference treatment	Time spent in hospital (weeks at 2 years)[b] Hospital readmissions (number at 2 years)[b] Total cost of hospital care ($, in millions, 1994)[b] Total cost of care ($, in millions, 1994)[b]	53 8 2.19 2.35	69 9 3.06 3.08		
Borderline personality disorder							
Stevenson and Meares, 1992 (39)	30	Outpatient psychotherapy 1. After 2. Before	Time as an inpatient (months per year)[a] Medical visits (number per month)[a] Time away from work (months per year)[a] Hospital admissions (number per year)[a]	1.5 0.5 1.4 0.7	2.9 3.5 4.5 1.8		
Unspecified/mixed diagnostic categories							
Klarreich et al., 1987 (40)	295	Rational-emotive therapy in the workplace 1. After 2. Before	Absenteeism per employee (days per year)[b] Annual cost of absenteeism per employee ($, 1987)[b,c]	3 431	10 1,485		
Finney et al., 1990 (41)	93	1. Psychological counseling of children with behavior, toileting, schooling, and psychosomatic problems 2. Control: no intervention	Change in number of medical encounters (%)[a,d] Change in total HMO medical/psychiatric encounters (%)[e]	–28 –8	–8 –3		

[a]$p<0.05$.
[b]p value not reported.
[c]Calculated as days per year per employee lost due to absenteeism multiplied by average daily cost to company of absentee employee.
[d]Calculated as [number after intervention minus number before intervention] divided by number before intervention.
[e]Nonsignificant difference between groups.

into 10 clinical trials with subjects randomly assigned to treatment (21–33) (table 1) and eight studies in which random assignment was not used (34–41) (table 2).

Clinical Trials With Random Assignment of Subjects

In the clinical trials with random assignment, the only diagnostic category for which psychotherapy appears to show little impact on costs is the affective disorders group. Scott and Freeman (21) randomly assigned 121 outpatients with nonpsychotic major depression to one of four treatment groups: amitriptyline prescribed by a psychiatrist, cognitive-behavior therapy performed by a clinical psychologist, counseling by a social worker, or routine care provided by a general practitioner that might include antidepressant medication, counseling, or referral to another agency. All treatment groups showed marked improvement in depressive symptoms over 16 weeks. Individual counseling by a social worker was statistically significant in its superiority to care by a general practitioner. In addition, psychological treatments, especially the social worker counseling, were

most positively evaluated by patients. However, because general practitioner care cost half as much, the authors concluded that the cost savings of primary-care-based treatment outweighed the advantages of specialist treatment. The authors speculated that if specialist treatment is shown to prevent recurrences over a longer term, the cost-benefit conclusion would then be different.

An examination of the random-assignment clinical trials for patients with schizophrenia suggests that family therapy results in reduction of a variety of costs. Five of the six studies demonstrated either statistically significant cost savings in the group that received family therapy versus the comparison group or statistically significant differences in outcome measures from which costs can be inferred. In the results found by Hogarty et al. (27), although no cost data are available, employment rates were markedly superior for the patients who received family therapy. Also, there were statistically significant differences in relapse rate, an outcome measure that involved rehospitalization in two-thirds of the cases. The Tarrier et al. cost analysis (26) seems to indicate that the family therapy modality may be particularly advantageous in those families of schizophrenic patients who manifest high expressed emotion, a particular style of interaction characterized by excessive criticism and intrusiveness on the part of the family members toward the schizophrenic patient.

The Zhang et al. study (29) demonstrated that family intervention and regular use of medication had independent and additive beneficial effects. The data of Spiegel and Wissler (24) showed that while family consultation in the home for recently discharged schizophrenic patients did not prevent readmission, it did provide a significant decrease in time spent in the hospital for the first 3 months. The only study that did not demonstrate a statistically significant difference between a family treatment group and a control group was the one conducted by Vaughan et al. (28), where a briefer intervention of counseling for the patient's relative was used in lieu of family therapy, which generally involves the patient as part of the process. In reviewing successful family treatments in other studies as compared with their own, Vaughan et al. concluded that both the inclusion of the patient in the family treatment and the longer course of family treatment in the other studies appeared to lead to significantly better results. Relapse, when it results in higher rehospitalization rates, has the advantage of serving as *both* a clinical (or health) outcome measure and a measure of cost. Thus, the efficacy of the treatment is being established while one is also studying cost considerations.

In a random-assignment controlled trial for patients with borderline personality disorder, Linehan et al. (30, 31) compared a group of borderline patients who received once-weekly group therapy and once-weekly individual therapy, known as dialectical behavior therapy, with a group of patients who received "treatment as usual" in the community, which averaged approximately 20 sessions of therapy per year. The statistically significant difference in time spent as an inpatient reflects substantial cost savings (as well as efficacy of the treatment) associated with dialectical behavior therapy. Considering that a day in the hospital costs four to seven times as much as an hour of individual therapy, the total costs were much smaller for the group receiving dialectical behavior therapy than for the comparison group. Indeed, Heard (42) calculated that dialectical behavior therapy saved approximately $10,000 per patient per year.

In the one controlled random-assignment study of anxiety disorders (32), behavioral psychotherapy conducted by a nurse therapist was compared with routine care from a general practitioner. The patients mainly suffered from phobias and obsessive-compulsive disorder, but there were also a few sexual disorders. At the end of 1 year, clinical outcome was significantly better for the patients who were treated by the nurse therapist, because they showed a slight decrease in the overall use of health care resources, while those in the group treated by general practitioners showed an increase in total cost. That increase was primarily related to the fact that those patients had more absences from work and greater use of hospitalization and medication, which also serve as measures of health outcomes.

The random-assignment controlled trial of substance-abusing patients (33) focused on opiate-dependent patients. All three study groups had the same dose of methadone. One group had only methadone and virtually no psychotherapy, while the second group had methadone plus meetings with a counselor that were oriented toward behavioral interventions. For the first month these occurred weekly, and they generally moved to a biweekly basis in months 2 through 6. The third group had enhanced services, involving the same dose of methadone and the same form of counseling but also additional resources, including the availability of a full-time psychiatrist, a half-time employment counselor, and a half-time family therapist. The results indicate that the groups receiving psychotherapy had greater earning power, less welfare income, and strikingly lower hospitalization rates—all indications of lower overall costs when psychotherapy was provided. Direct treatment costs were not calculated for each group, but once again the cost of hospitalization is so much greater than an hour of counseling that we can infer evidence of a beneficial impact on costs. The stepwise incremental value of the enhanced intervention over simple counseling is particularly striking in this study.

Studies in Which Treatment Was Not Randomly Assigned

Turning to the studies with nonrandom assignment (table 2), we can see that these investigations of affective disorders show much greater cost savings than the one by Scott and Freeman (21). Both studies involved considerable numbers of inpatient days, which greatly escalate the total cost of treatment as compared with

Scott and Freeman's design, which included only depressed outpatients. In the study by Verbosky et al. (35), the average number of psychotherapy visits was 5.5, costing a total of $257.50. This small investment saved $25,405 per patient in the cost of additional hospital days in comparison with the untreated depressed group. Cost data were not provided by Retzer et al. (34), but the relapse rate, as measured by hospital admissions, was dramatically lower after family therapy than before family therapy. The average family received 6.6 sessions of family therapy. In fact, the entire average cost of family therapy was approximately equal to the cost of 1 day of hospitalization.

The three studies of schizophrenia with nonrandom assignment to treatment support the findings of the trials with random assignment: family therapy greatly reduces the amount of time spent in the hospital. While the Rund et al. study (38) provided cost data, the Lehtinen study (37) did not. Nevertheless, it is clear from the Lehtinen study that a group of 28 patients treated with an emphasis on crisis-oriented family interventions had less than half the number of inpatient days in comparison with that of an earlier series of patients for whom the emphasis was on individual and milieu therapy. The Haakenaasen and Ugelstad study (36) is less conclusive, in part because of a very small sample size; three of the four groups contained only six patients. There is a clear indication that vocational rehabilitation has a dramatic effect on work history, and there is also a suggestion that both psychotherapy and vocational rehabilitation may reduce time spent in the hospital.

The study by Stevenson and Meares (39) on borderline personality disorder, which used a before-after design, found statistically significant differences in four major areas that demonstrate efficacy of the treatment as well as its cost implications as a result of twice-weekly individual psychodynamic therapy. After 1 year of the psychotherapy, months per year as an inpatient were cut in half, months per year away from work fell from 4.5 to 1.4, medical visits per year dropped to one-seventh of pretherapy rates, and hospital admissions fell to two-fifths of the previous level—all reflecting meaningful cost reductions (the actual cost of the psychotherapy was not reported).

In the studies involving unspecified/mixed diagnostic categories, Klarreich et al. (40) used rational-emotive therapy as part of an employee assistance program in a large North American oil company. The patients were referred for a diverse set of psychiatric and emotional problems and received an average of 4.1 sessions. There was a robust effect on rate of absenteeism, which was translated into considerable cost savings. In the Finney et al. study (41), which used psychological counseling for children with a diverse set of psychosomatic and behavior problems, there was a more traditional cost offset finding: a statistically significant drop in medical care utilization following the counseling.

All in all, eight (80%) of the 10 clinical trials with random treatment assignment and all eight (100%) of the studies in which treatment was not randomly assigned suggest that psychotherapy reduces a variety of costs. Combining the studies, we can conclude that 88.9% of the relevant studies suggest a beneficial economic impact of psychotherapy.

DISCUSSION

This review of psychotherapy studies from 1984 through 1994 provides evidence that psychotherapy may reduce various costs in the treatment of certain psychiatric disorders. However, there are limitations of these studies that must be taken into account. The studies that we have reviewed typically used rather small groups of subjects. Also, cost reporting was quite inconsistent. Many studies provided no cost-benefit analysis whatsoever, while in those that did, there was often lack of attention to charges versus costs. Many major cost categories were ignored, since cost and utilization were not primary endpoints in most studies. After all, most of the studies were not designed primarily to study cost-effectiveness. In the studies that did provide cost outcomes, there was often a failure to perform tests for statistical inferences. Finally, there is a well-known bias against publishing studies with negative findings, so it is unknown whether some studies showing added costs or no overall change were not accepted for publication.

Generalizability from these 18 studies is also somewhat problematic. The subjects varied considerably, as did the interventions, leading to two major limitations in applicability to real-world settings. First, by design the studies reviewed here involved highly selected, relatively homogeneous groups of patients in controlled (often academic) settings rather than the typical patients encountered in actual clinical practice, who may present a more complicated picture, with comorbid disorders and the like. We cannot be sure whether the results achieved in these studies are generalizable to routine care in the community. The studies were thus designed to measure efficacy rather than effectiveness. Second, the intervention context has shifted with time. Many of these studies occurred in an era when hospitalizations were lengthier, so the state-of-the-art use of inpatient treatment today might result in somewhat smaller savings because of a shorter average length of stay. In some studies, such as the one conducted by Verbosky et al. (35), there was also a confounding of the effects of psychotherapy by medication, because all of the patients given psychotherapy were taking antidepressants as well. This combined therapy, while clinically sound, may make it difficult to tease out medication effects from psychotherapeutic effects. Also, the subset of patients with major depression, from which data about length of stay were derived, was quite small.

Despite these limitations, certain tentative conclusions can be reached from the studies reviewed here. Psychotherapy appears to have a beneficial impact on a variety of costs for patients with the most severe disorders. In other words, illnesses such as schizophrenia, bipolar affective disorder, and borderline personality

disorder generally involve a good deal of hospital treatment in the course of the illness and substantial degrees of work impairment. The studies suggest that psychotherapy may be a useful investment in these disorders because it may have an impact on both work performance and duration (and frequency) of hospitalization. In the milder forms of affective disorder, such as nonpsychotic depression, the economic impact of psychotherapy is less apparent because hospitalization does not enter the picture as much.

Schizophrenia appears to show the most evidence that a psychotherapeutic intervention can have a positive effect on costs. This may be surprising, since common lore holds that psychotherapy is least effective for patients with the most serious psychiatric disorders. Note, however, that the studies involved psychotherapy or consultation for the families of schizophrenic patients as well, mobilizing the more accessible social resources to support the identified patient better. A more recent report by McFarlane et al. (43) has demonstrated that multiple-family groups may result in even lower relapse rates than single-family therapy for patients with schizophrenia. This modality required exactly half the staff time per patient in comparison with a format involving single-family therapy. McFarlane et al. calculated a 1:34 cost-benefit ratio for multiple-family therapy and a 1:17 cost-benefit ratio for single-family therapy. In other words, when one compares the ratio of treatment costs to the savings in terms of reduced hospitalization, multiple-family therapy was twice as cost-effective as single-family therapy.

This review of psychotherapy studies underscores the need for all future studies measuring the outcome of psychotherapy to incorporate cost analyses. In many comparative outcome studies, cost has only entered into the study as a secondary or peripheral goal. In an era of limited health resources, it is imperative that investigators begin to place such considerations at the heart of their research designs. Some highly sophisticated approaches to quantifying outcome data in economically meaningful terms have begun to appear in the literature. Wells et al. (44) have developed scales to rate the physical, social, and role functioning of depressed patients. Kamlet et al. (45) have developed a cost-utility analysis of the maintenance treatment for recurrent depression.

Including economic analyses as part of clinical trials, whether they are assessing a psychiatric or a medical intervention, has recently become a more common consideration. Issues to be clarified when one is designing such economic analyses include deciding 1) the goals of the economic analyses, 2) the measures to use to ensure adequacy of cost data, 3) the study group size necessary for generating statistical power sufficient to find the desired effect (if it exists), and 4) the analysis of the economic data.

In some instances, cost analyses are presented apart from clinical data, because previous work has already established the effectiveness of the treatment; thus, the goal of the analysis is to show that the treatment is also less expensive, a so-called cost-minimization trial. More commonly, new treatments add to the costs of care, either through the implementation of the treatment or by its later effects on use of health care resources. In such instances, cost analyses can be combined with clinical endpoints into a summary measure of *cost-effectiveness*, *cost-utility*, or *cost-benefit*. In cost-effectiveness analyses there usually is a single endpoint, such as years of life gained. The cost-effectiveness ratio is the difference in cost versus the difference in years of life gained between the two interventions. When multiple clinical endpoints are compared (e.g., survival and quality-of-life measures), the cost analyst may use the technique of cost-utility analysis, where the multiple clinical endpoints are summarized into a single measure, such as quality-adjusted life years saved. In this case the cost-utility measure is the ratio of the difference in costs to the difference in quality-adjusted life years. In cost-benefit analysis, the measure of clinical effectiveness is not expressed in terms of quality of life or years of life gained but in monetary terms (i.e., a monetary value is attached to the clinical endpoints). This technique has been applied widely in public policy, but it is used much less in evaluations of health care interventions because of controversies about attaching a monetary value to life.

The following is a list of components that may contribute to the overall costs of an intervention.

1. Costs of implementing the intervention. For psychotherapy, the data collected should include the costs associated with wages of the psychotherapists, written or video materials, wages of staff who might have to advertise and organize group sessions, and rent for office space. For medication treatment, the data should include the costs of taking the medication and any testing needed to monitor its efficacy and safety.

2. Costs of subsequent medical care utilization. Data should be collected on inpatient care (psychiatric, medical, and other), including wages, laboratories, imaging studies, and rent, and on outpatient care (medical, psychiatric, nursing home, home care, and phone medicine service), also including wages, laboratories, imaging studies, and rent. Pharmacology costs not related directly to one of the interventions under study should be accounted for, as well as the use and cost of alternative healers.

3. Last, the cost of nonmedical components, such as the patient's or family's lost wages or productivity at work, may be relevant.

Economic analyses generate new and complex issues in analyzing data from clinical trials. Although there is substantial and rising interest in economic analyses, achieving statistical power in these studies to find a meaningful difference in cost between two interventions will be difficult, because the variability in costs is generally greater than the variability in other clinical endpoints. Recent publications (46, 47) have considered these complexities in some detail, and strategies for making such research feasible are evolving.

This review has focused on evidence of economic ef-

fects produced by psychotherapy. This is a rather stringent outcome criterion, which presumes numerous mediating changes—reduced symptoms, better self-management, improved social support—all leading to reduced treatment costs and better economic functioning. Such tangible results of interventions that are often perceived as intangible are encouraging and suggest that medical resources devoted to helping patients and their families cope better with serious psychiatric illness are well utilized. Both the methods employed—a variety of cognitive, behavioral, and interpersonal interventions—and the populations treated—families as well as patients—are broader than those often included in traditional "psychotherapy" models. Yet the results show that the "talking cure" may have wider effective application than previously thought, even in times of careful analysis of costs and benefits. But conversely, these studies also indicate that there is a substantial cost in *not* providing the mentally ill with adequate psychotherapeutic support, not only in human terms but also in economic terms.

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